FY14 R1 Invasive Species Control Project (ISCP) Proposal

Refuge/complex name: Umatilla NWR/Mid-Columbia River NWRC

Project title: Umatilla Slough Rough Fish Eradication

Total amount requested: $35,500

Project description:

Target Invasive Species:	Common Carp (*Cyprinus carpio)* and catfish (primarily *Ameriurus* spp.)
Infested acres:	159 acres (~300-330 acre-feet)
Treatment acres:	159 acres (~300-330 acre-feet)

The purpose of the proposed action is to enhance environmental conditions in the McCormack Slough on Umatilla NWR by reducing the population of rough fish, including common carp (*Cyprinus carpio*) and bullheads (*Ameriurus* spp.). Preliminary sampling conducted in 2013 found that the entire McCormack Slough is effectively denuded of submerged aquatic vegetation and showed high turbidity, a common symptom of carp infestation. Visual observations of the slough show high levels of carp presence. The goal of the proposed action is to reduce the current population of rough fish by a minimum of 99 percent and to maintain the population at or below this reduced level. The proposed action is also specifically identified as a primary objective within the Umatilla CCP, to the goal of providing high-quality wetland habitats for the benefit of migratory birds and other wetland plants and animals.

Distinct project with well-defined objectives (10 points):
The Refuge has not conducted any control activities of invasive fish since the late 1990s. Monitoring of water quality metrics and aquatic vegetation provided strong evidence of the negative impacts of rough fish to these aquatic habitats, and provided a compelling explanation for the long-term decline in use of the Slough by wintering waterfowl. The Refuge is seeking to reduce these habitat impacts and is pursuing funding to treat the Slough in 2014. The potential for complete eradication makes this project unique in comparison with many other invasive issues. If treated properly the slough could remain rough fish free indefinitely providing a tremendous boost to food availability for wintering waterfowl.

Potential for maximum control (10 points):
The McCormack Slough is completely isolated from surrounding water; inflow into the Slough is through groundwater. Historically, inflow and outflow to the Columbia River existed, but it has been stopped by a double barrier. A screw gate and culvert at the bottom end of the slough empty into a short channel that is closed off from the river by a semi-permanent earthen barrier. These two fortifications prevent exchange of water between the slough and the river. Past rotenone treatment was conducted on the east end of McCormack Slough and was very successful. At that time the Slough was separated by a dike into east and west halves. Later, the dike was removed and carp reinvaded the east half through the channel from the west half. We will treat the entire Slough; control of rough fish will be immediate. Long term effectiveness depends on survivorship of rough fish through the treatment, reinvasion from external sources, and reproductive rate of any survivors. The Refuge is examining options for introduction of fish species that can prey on small carp and carp eggs to provide a biological control to maintain the effectiveness of the treatment for the long term. Bluegill is the primary species being considered. To prevent reinvasion and movement of carp after treatment, we will continue to monitor the land bridge and back up screw-gate to ensure both serve as barriers to the river and maintain them in effective condition. We will monitor water and habitat quality (water clarity, vegetation presence) to determine success of treatments and potential need for future treatments. Treatment will occur in early fall when water is lowest in the slough, providing the best opportunity to kill fish.

Biological benefit to priority species or BIDEH (10 points):
The Refuge was established under the authority of the fish and wildlife coordination act to mitigate losses of habitat including wetlands caused by building the John Day Dam. The general plan designated the Refuge set aside "for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon." The general plan also states specifically: "the slough will provide area for waterfowl nesting, resting and feeding" and "extensive stands of aquatic vegetation will develop in the shallow areas." Eradication of the primary (invasive) degrading component of the project area will enhance biological integrity by releasing the natural aquatic vegetation from heavy levels of herbivory. The resultant increase in primary production will stimulate recovery of aquatic invertebrates. Anecdotal comments from past managers who have performed rotenone treatments on McCormack Slough characterize the vegetative response as "very fast" and "very successful." The anticipated improvement in water quality, vegetative structure, and invertebrate populations to a system more like the native community will provide improved feeding opportunities for waterfowl during crucial breeding, wintering, and migratory periods. We successfully carried out a very similar control effort on McNary NWR in 2013, and have the experience, equipment, and staff to implement this project.

Sustainability (10 points): Monitoring the effects of the rotenone on the Slough will be carried out through the help of a contractor. Additional monitoring will be done with current staff and budgets. Contracted post treatment testing will include water quality (volatile organic compounds, semi-volatile organic compounds, and modified semi-volatile organic compounds), benthic macro invertebrates, and zooplankton. Long-term water metrics (water temperature and light penetration variation), and water clarity are already being monitored by Refuge staff and will be continued. We do not anticipate further funding needs, at least for several years.

Comment [BF1]: Ba ha ha ha ha!

Monitoring to document and evaluate project success (10 points):
Pre-treatment monitoring of submerged aquatic vegetation, zooplankton communities, and turbidity has was performed in the summer of 2013. In those water bodies targeted for rotenone application, the proposed project would monitor long-term water metrics (water temperature and light penetration variation), water clarity, submerged aquatic vegetation (SAV), and zooplankton community structures. Refuge volunteers have conducted waterfowl use surveys of the sloughs before treatment and will continue monitoring after treatment to provide a measure of waterfowl response to the treatment. We will also complete bathymetry and volumetric estimates of the sloughs to improve targeting and volumetric calculations of rotenone applications, to improve efficacy of the treatment.

Budget:
$25,000 -This will provide the funding for the purchase of sufficient rotenone product to treat the slough. The Refuge will supply all manpower, equipment, and funds necessary to treat the Slough and conduct follow-up monitoring.

$9,000- Contracted post treatment testing (volatile organic compounds, semi-volatile organic compounds, and modified semi-volatile organic compounds), benthic macro invertebrates, and zooplankton.
Long-term water metrics (water temperature and light penetration variation), and water clarity are being monitored by Refuge staff.

$1,500- Cost of volunteer intern team for 1-2 months, to complete the bathymetry and volumetric estimates of the sloughs to improve targeting and volumetric calculations of rotenone applications, to improve efficacy of the treatment.